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(54)【発明の名称】 防汚塗料

(57)【要約】

【目的】 船底や海洋構造物に塗布される防汚塗料を、人体に悪影響を与えないものとする。

【構成】 エポキシ樹脂等の合成塗料に25合金等のベリリウム銅合金粉末を添加混合して防汚塗料を得る。

【効果】 ベリリウム銅合金は人体に悪影響を与えず、また、貝等の付着を許さないので、防汚塗料の塗装表面には、生物の付着が防止される。

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【特許請求の範囲】

【請求項1】 原料塗料にベリリウム銅合金粉末を分散させたことを特徴とする防汚塗料。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は防汚塗料に係り、特に、船底の塗料又は海洋構造物の塗料に好適なものに関する。

【0002】

【従来の技術】 従来、船底又は海洋構造物に貝等の生物が付着するのを防止するために、スズ（錫）を含む塗料で塗装することが行われている。

【0003】 例えば、船底（海水と接する船の外壁面。以下、船体というときもある。）にスズを含む塗料で塗膜が形成されると、スズを含まない塗料の塗膜と比べ、生物の付着が少なく、このため、船の走行抵抗を小さくでき、消費燃料が少なくて済むという特長がある。

【0004】 しかし、スズを含む塗料の塗膜であっても、長期間経過すると、塗膜表面が汚損され、ついに貝等の生物の付着が起きてしまう。このため、塗膜表面を削除し、新たな塗膜面が現れるように更新される。

【0005】

【発明が解決しようとする課題】 しかしながら、上記スズを含む、塗膜が削除されて水中（海水）に放出されると、魚介類を介して人体に取込まれて悪影響を与えることが指摘されている。

【0006】 そこで、本発明は、上記欠点を解決するためになされたものであって、その目的は、防汚性に優れ、かつ人体に悪影響を与えない安全な防汚塗料を提供することにある。

【0007】

【課題を解決するための手段】 本発明に係る防汚塗料は、上記目的を達成するために、原料塗料にベリリウム銅合金粉末を分散させたことを特徴としている。

【0008】 原料塗料は、天然又は合成の周知の塗料を採用することができる。原料塗料は、ベリリウム銅合金粉末のバインダーの役目と、船体や海洋構造物への接着剤の役目を有すればよく、したがって、本発明で原料塗料というときは、接着剤と同義である。なお、原料塗料は、船体や海洋構造物を腐蝕から効果的に防止するために、例えば、エポキシ樹脂等の合成樹脂等塗料が好適である。

【0009】 ベリリウム銅合金粉末は、10合金、25合金、55合金あるいは165合金等の周知のベリリウム銅合金の粉末である。また、粉末の粒径は特に限定さ

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れないが、例えば、1～100 $\mu$ が使用される。

【0010】 原料塗料にベリリウム銅合金粉末を添加する割合は、本発明に係る防汚塗料を船体等に塗布したときの塗装表面に、ベリリウム銅合金粉末粒子が均一に現れればよく、例えば、容量比で、原料塗料1に対し、0.05～0.80である。

【0011】 原料塗料へのベリリウム銅合金粉末の分散は、原料塗料へ所定量のベリリウム銅合金粉末を添加して周知の混合攪拌機を用いて均一に分散させて調製することができる。

【0012】

【作用】 上記構成において、原料塗料に均一に分散されたベリリウム銅合金粉末は、船体等に塗布されると、塗装表面にも均一に現れる。ベリリウム銅合金粉末は、貝等の生物の付着を防止するので、塗装表面は、生物の付着を許さない。

【0013】

【実施例】 25合金からなるベリリウム銅合金粉末（平均粒径60 $\mu$ ）400gを市販のエポキシ樹脂系塗料（原料塗料）100gに添加して混合攪拌して防汚塗料を得た。

【0014】

【実験例】 表面積900cm<sup>2</sup>のポリエステル板を2枚用意し、そのうちの1枚に上記実施例で得られた防汚塗料を塗布し、他の1枚は無塗布とし、両者を貝等の生息する海水に14日間浸漬した。

【0015】 実施例に係る塗料を塗布した鉄板には、貝等の付着は全くなかったが、無塗布のポリエステル板には多数の貝の付着が見られた。

【0016】 なお、上述の実施例では、原料塗料にベリリウム銅合金粉末を添加して混合攪拌して防汚塗料を得たが、原料塗料の吹付けと同時にベリリウム銅合金粉末を吹付けるようにしてもよく、また、原料の塗料の塗布後、塗料が乾燥する前にベリリウム銅合金粉末を吹付けるようにしてもよい。

【0017】 さらに、船体が合成樹脂製のときは、船体を成形する鋳型のキャビティ表面に、本発明に係る防汚塗料を塗布しておき、次いで合成樹脂を注入するようにしてもよい。

【0018】

【発明の効果】 本発明に係る防汚塗料は、原料塗料にベリリウム銅合金粉末を分散させたので、この防汚塗料が塗布されると、塗装面に貝等の生物の付着が防止される。この防汚塗料に含まれるベリリウム銅合金は無害なので、安全な防汚塗料とすることができる。

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**DOCUMENT-IDENTIFIER:** JP 06228468 A  
**TITLE:** ANTIFOULING COATING  
**PUBN-DATE:** August 16, 1994

**INVENTOR-INFORMATION:**

| NAME           | COUNTRY |
|----------------|---------|
| SUGIURA, YASUO |         |

**ASSIGNEE-INFORMATION:**

| NAME           | COUNTRY |
|----------------|---------|
| ASAHI TEC CORP | N/A     |

**APPL-NO:** JP05034100  
**APPL-DATE:** January 29, 1993

**INT-CL (IPC):** C09D005/14

**US-CL-CURRENT:** 523/122

**ABSTRACT:**

**PURPOSE:** To provide an antifouling coating used for coating ship bottoms and marine structures and not affecting human bodies.

**CONSTITUTION:** The powder of a beryllium copper alloy such as 25 alloy is added and mixed with a synthetic coating containing an epoxy resin, etc., to provide an antifouling coating. Since the beryllium copper alloy does not affect human

bodies and does not permit the adhesion of shellfish, etc., the adhesion of organisms to the coated surface of the antifouling coating is prevented.

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JAPANESE

[JP,06-228468,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL  
FIELD PRIOR ART EFFECT OF THE INVENTION  
TECHNICAL PROBLEM MEANS OPERATION  
EXAMPLE

[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to an antifouling paint and relates to the suitable thing for the paint of a ship's bottom, or the paint of the offshore structure especially.

[0002]

[Description of the Prior Art] In order to prevent living things, such as a shellfish, from adhering to a ship's bottom or the offshore structure conventionally, painting in the paints containing tin (tin) is performed.

[0003] For example, a ship's bottom (external wall surface of the ship which touches sea water.) Hereafter, it may be called a hull. When a coat is formed in the paints containing

tin, there is the feature of there being little adhesion of a living thing, and for this reason being able to make running resistance of a ship small, and there being few burn-out fuels compared with the coat of the paint which does not contain tin, and ending.

[0004]However, if a long period of time passes even if it is a coat of the paint containing tin, a paint film surface will be soiled and adhesion of living things, such as a shellfish, will occur at last. For this reason, a coat surface layer is deleted, and it is updated so that a new film surface may appear.

[0005]

[Problem(s) to be Solved by the Invention]However, if the coat containing the above-mentioned tin is deleted and it is emitted underwater (sea water), it being incorporated into a human body via fish and shellfishes, and having an adverse effect is pointed out.

[0006]Then, it is in providing the safe antifouling paint which is made in order that this invention may solve the above-mentioned fault, and the purpose excels [ antifouling paint ] in antifouling property, and does not have an adverse effect on a human body.

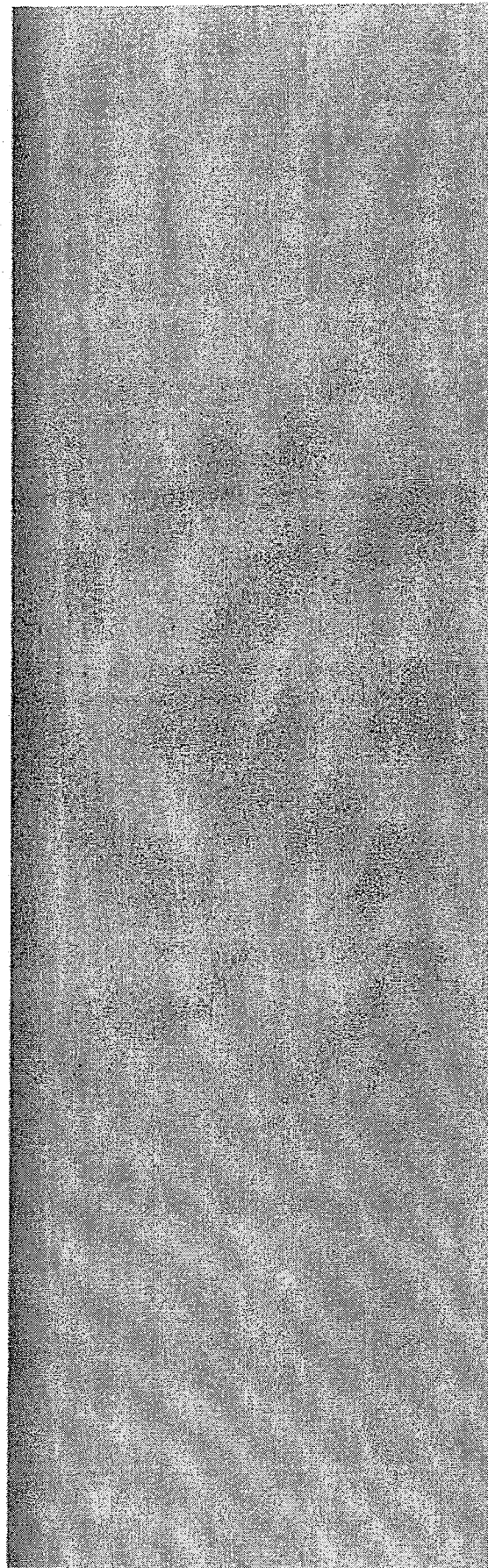
[0007]

[Means for Solving the Problem]An antifouling paint concerning this invention is characterized by making a raw material paint distribute beryllium-copper-alloy powder to achieve the above objects.

[0008]A paint of common knowledge of nature or composition can be used for a raw material paint. A raw material paint is synonymous with adhesives, when what is necessary is just to have a duty of a binder of beryllium-copper-alloy powder, and a duty of adhesives to a hull or the offshore structure therefore and they are called raw material paint by this invention. In order to prevent a hull and the offshore structure effectively from corrosion, paints, such as synthetic resins, such as an epoxy resin, are preferred for a raw material paint, for example.

[0009]It is the powder of a beryllium copper alloy of common knowledge of ten alloys, 25 alloys, 55 alloys, or 165 alloys the end of \*\* RIRIUMU copper alloy powder. Although powdered particle diameter in particular is not limited, 1-100micro are used, for example.

[0010]A beryllium-copper-alloy powder particle should just appear uniformly in a paint surface when an antifouling





paint concerning this invention is applied to a hull etc., for example, a rate which adds beryllium-copper-alloy powder in raw material paints is a capacity factor, and are 0.05-0.80 to the raw material paint 1.

[0011] Beryllium-copper-alloy powder of the specified quantity can be added to a raw material paint, it can be made to be able to distribute uniformly using a well-known agitation mix machine to it, and distribution of beryllium-copper-alloy powder to a raw material paint can be prepared to it.

[0012]

[Function] In the above-mentioned composition, if the beryllium-copper-alloy powder uniformly distributed by the raw material paint is applied to a hull etc., it will appear uniformly also in a paint surface. Since beryllium-copper-alloy powder prevents adhesion of living things, such as a shellfish, a paint surface does not allow adhesion of a living thing.

[0013]

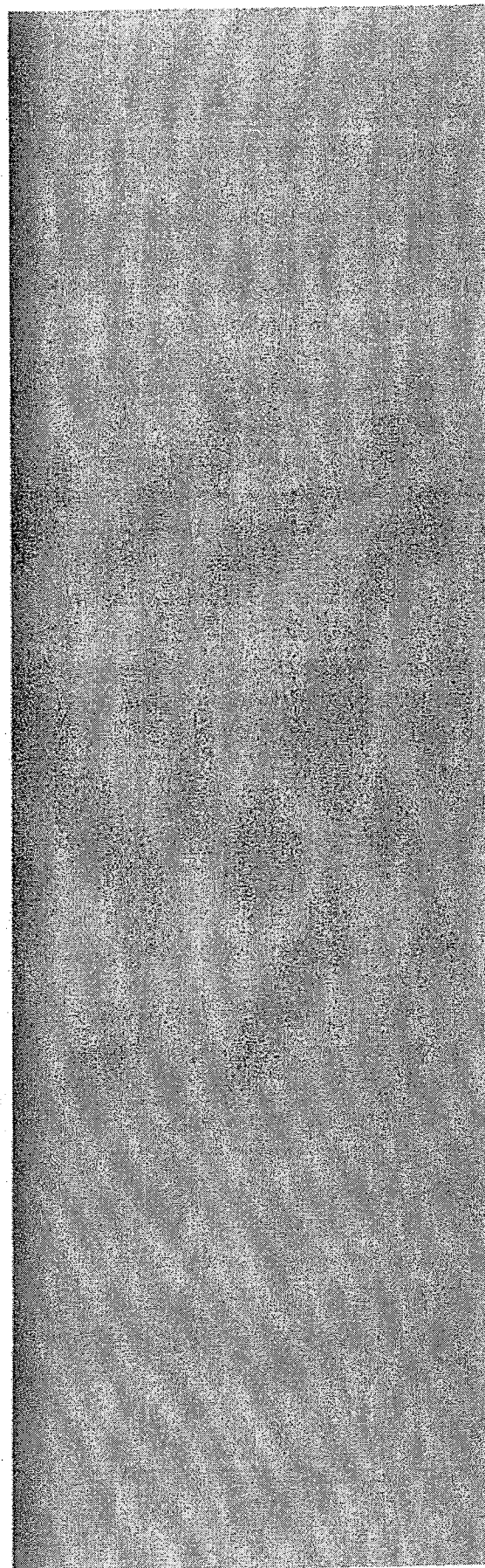
[Example] The agitation mix of 400 g of the beryllium-copper-alloy powder (mean particle diameter of 60micro) which consists of 25 alloys was added and carried out to 100 g of commercial epoxy resin system paints (raw material paint), and the antifouling paint was obtained.

[0014]

[Example(s) of Experiment] Two polyester plates of surface area<sup>2</sup> of 900 cm were prepared, the antifouling paint obtained in the above-mentioned example by one of them was applied, and other one sheet presupposed no applying and immersed both in the sea water which a shellfish etc. inhabit for 14 days.

[0015] Although there was no adhesion of a shellfish etc. in the griddle which applied the paint concerning an example, adhesion of many shellfishes was looked at by the unapplied polyester plate.

[0016] Although the agitation mix of the beryllium-copper-alloy powder was added and carried out to the raw material paint and the antifouling paint was obtained in the above-mentioned example, Beryllium-copper-alloy powder may be made to spray simultaneously with spraying of a raw material paint, and before a paint dries, beryllium-copper-alloy powder may be made to spray after spreading of the paint of a raw material.



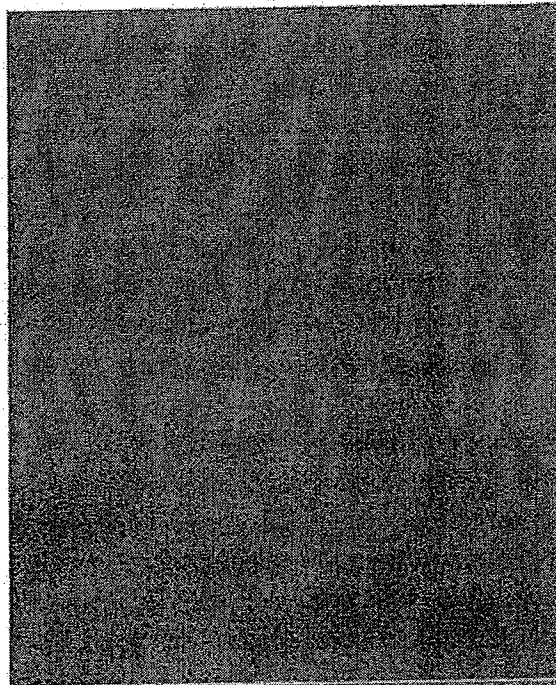
[0017]When a hull is a product made of a synthetic resin, the antifouling paint concerning this invention is applied to the cavity surface of the mold which fabricates a hull, and it may be made to pour in a synthetic resin subsequently.

[0018]

[Effect of the Invention]Since the antifouling paint concerning this invention made the raw material paint distribute beryllium-copper-alloy powder, if this antifouling paint is applied, adhesion of living things, such as a shellfish, will be prevented by the painted surface. Since the beryllium copper alloy contained in this antifouling paint is harmless, it can be considered as a safe antifouling paint.

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|---|---|----------------------------------|------------------------------|
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|   | Docket Number<br>HES 2002-IP-007905U1D1 | Group Art Unit<br>1796           | Filing Date<br>July 18, 2006 |

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| HOU03:1155311.1EXAMINER /Alicia Toscano/  | DATE CONSIDERED 06/17/2008 |
| EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant. |                            |

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